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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/562,189

10/09/2007

Xavier Vera

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EXAMINER

BUTLER, DENNIS

ART UNIT

PAPER NUMBER

2115

MAIL DATE

DELIVERY MODE

11/13/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/562,189	Applicant(s) VERA ET AL.	
	Examiner Dennis M. Butler	Art Unit 2115	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 October 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-30 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 December 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>(12/22/05)(5/24/07)(10/15/07)(4/10/08)</u> . | 6) <input type="checkbox"/> Other: _____ |

1. This action is in response to the application filed on October 9, 2007. Claims 1-30 are pending. This application is a 371 application of PCT/ES2005/070152 filed on October 26, 2005.

DETAILED ACTION

Claim Rejections

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to

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consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 1-3, 5-6, 9-10, 13-22 and 25-30 are rejected under 35 U.S.C. 102(b) as being anticipated by University of Rochester, International Publication Number WO 2004/066092.

Per claims 1-3, 9-10, 21, 25 and 28-30:

A) University of Rochester teaches the following claimed items:

1. logic/sensors detecting one or more variations within a clock domain (page 8, lines 1-7, page 18, lines 15-17, processor reconfiguration decisions could be made in hardware, software or a combination of the two using information gathered from on-line statistics or feedback-based profiling corresponds to sensing/detecting variations within a clock domain) of a plurality of clock domains of a processor (page 11, lines 5-8); and
2. a frequency controller adjusting a clock signal of the clock domain in response to the one or more variations (page 8, lines 1-7 and page 18, lines 15-17).

Per claims 5-6, 13-20, 22, 26 and 27:

Regarding claims 5, 20 and 27, University of Rochester discloses first-in first-out buffers (queues) to synchronize communication between clock domains with figures 2 and 3 and at page 15, lines 1-22. Regarding claims 6, 22 and 26, University of Rochester discloses speculative execution (using DAGs and histograms to predict slack and calculate the minimum frequency and voltage to

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permit the clock domain to minimize slack and operate at maximum efficiency) at page 21, lines 7 – page 22, line 1 and at page 23, lines 1-8. Regarding claims 13-19, University of Rochester discloses one or more front end domain (domain 110 of figure 1), backend domain (domains 120 and 130 of figure 1) and an L2 cache domain (domain 140 of figure 1). University of Rochester discloses the recited units of the clock domains with figure 1 and at page 11, lines 9-18.

6. Claims 4, 7-8, 11-12 and 23-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over University of Rochester, International Publication Number WO 2004/066092 in view of Advanced RISC Machines, International Publication Number WO 2004/084070.

University of Rochester teaches the elements of claims 1, 6, 9-10 and 22 as disclosed in the above rejection. University of Rochester does not teach detecting timing errors, comparing timing errors to a threshold value and adjusting the clock. However, Advanced RISC Machines discloses that it is known to detect timing errors, compare the timing errors to a threshold value and adjust the clock according to the comparison in a processor similar to the processor of University of Rochester at page 17, lines 1-17. It would have been obvious to one having ordinary skill in the art at the time the invention was made to detect timing errors, compare the timing errors to a threshold value and adjust the clock according to the comparison, as taught by Advanced RISC Machines, in order to maximize the conservation of energy by determine the minimum

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frequency and voltage the processor can properly execute a sequence of code without an undue number of timing errors.

7. Claims 1-3, 9-12, 25 and 28-30 are rejected under 35 U.S.C. 102(b) as being anticipated by Georgiou et al., U.S. Patent 6,047,248.

Per claims 1-3, 9-11, 25 and 28:

A) Georgiou et al teach the following claimed items:

1. logic/sensors (thermal sensors 119) detecting one or more variations (temperature variations) within a clock domain (any one of clock domains of functional units 1 through K) of a plurality of clock domains of a processor (processor of figure 1) with figure 1, at column 2, lines 19-26 and at column 4, lines 18-30; and
2. a frequency controller adjusting a clock signal of the clock domain in response to the one or more variations with clock selector 430 of figures 1 and 4, at column 4, lines 31-51 and at column 8, lines 37-67.

Per claims 12, 29 and 30:

Georgiou discloses detecting variations based on a number of detected errors (exceeding or approaching a threshold temperature) within the clock domain with figure 2, at column 7, lines 33-37, with figure 5c and at column 11, lines 34-52.

Georgiou discloses computing functions comprise data processing with figure 1 and at column 3, line 48 – column 4, line 17. Georgiou discloses the computing system comprises at least one of a laptop computer, a desktop computer, a server and a workstation with figure 1 and at column 3, lines 53-65.

Conclusion

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dennis M. Butler whose telephone number is 571-272-3663. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Dennis M. Butler/
Primary Examiner, Art Unit 2115

Dennis M. Butler
Primary Examiner
Art Unit 2115